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(54) **Method for an enhanced communication between a first network node and a second network node of a telecommunications network, and telecommunications network**

(57) The invention relates to a method for an enhanced communication between a user equipment and a telecommunications network, wherein the user equipment comprises an application and a short message push client, wherein the telecommunications network comprises an application server and a short message push server, wherein the application uses push notifications received from the telecommunications network, wherein in case that a push notification is to be sent from the application server to the application of the user equipment the method comprises the following steps:
-- in a first step, information related to the push notification to be sent is transmitted from the application server to

the short message push server,
-- in a second step, the push notification is transmitted from the short message push server to the short message push client,
-- in a third step, the push notification, received by the short message push client, is made available to the application of the user equipment,

wherein the push notification is transmitted from the short message push server to the short message push client as at least one short message according to the short message service protocol (SMS protocol), wherein the at least one short message is of a binary message format.

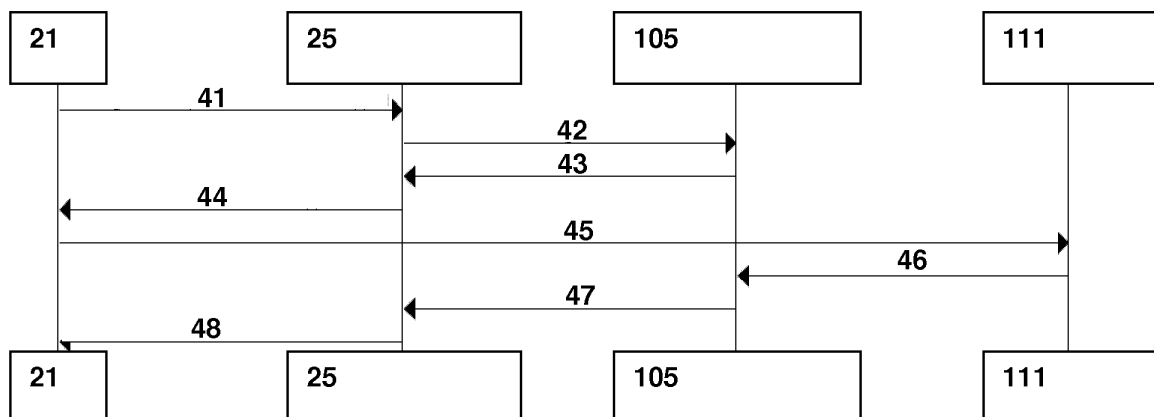


Fig. 2

Description

BACKGROUND

[0001] The present invention relates inter alia to a method for an enhanced communication between a user equipment and a telecommunications network, wherein the user equipment comprises an application and a short message push client, wherein the telecommunications network comprises an application server and a short message push server, wherein the application uses push notifications received from the telecommunications network.

[0002] Furthermore, the present invention relates to a telecommunications network for an enhanced communication between a user equipment and the telecommunications network, wherein the user equipment comprises an application and a short message push client, wherein the telecommunications network comprises an application server and a short message push server, wherein the application uses push notifications received from the telecommunications network.

[0003] Additionally, the present invention relates to a user equipment for an enhanced communication between the user equipment and a telecommunications network, wherein the user equipment comprises an application and a short message push client, wherein the telecommunications network comprises an application server and a short message push server, wherein the application uses push notifications received from the telecommunications network.

[0004] Furthermore, the present invention relates to a program comprising a computer readable program code and a computer program product for using a telecommunications network comprising a computer program which, when executed on a computer and/or on a network node of a telecommunications network, especially an application server and/or a short message push server, and/or on a user equipment, especially in part on the network node of the telecommunications network and in part on the user equipment, causes the computer and/or the network node of the telecommunications network and/or the user equipment to perform the inventive method.

[0005] Telecommunications networks, and the usage of push notifications within telecommunications network are well known. To provide mobility and portability to the devices interconnected by telecommunications networks such as the internet, wireless and mobile computing devices, or user equipments, have been introduced. With mobile device or user equipments using wireless data networks, people are able to travel and yet perform tasks as if they would be connected to the telecommunications network in a stationary manner.

[0006] To be timely and periodically informed, one way is to electronically communicate the information requests from a mobile device that is connected to a wireless data network or mobile telecommunications network. The mobile telecommunications network, for example, connects,

through a proxy server, to an information server from which the desired information can be retrieved by the mobile device (or user equipment) on demand.

[0007] When using a push information delivery system, information such as update information, is automatically distributed towards users of mobile devices or user equipments. One example of a system able to transmit push notifications to the mobile device or user equipment is to use Internet Protocol communication between the telecommunications network and the mobile device or user equipment. Internet Protocol push notifications are commonly used on mobile platforms like iOS, Android, Windows Phone and others. Moreover, every mobile platform has its own implementation which makes it difficult to handle cross-platform push notifications.

[0008] However, such push notifications are not always delivered to the device on time, especially in bad network situations. Furthermore, transmitting Internet Protocol push notifications requires an Internet Protocol connection being established between the mobile device or user equipment on the one hand and the telecommunications network on the other hand. Especially for mobile devices, it is a drawback that Internet Protocol push notifications requires long-live Internet Protocol connections to the notification server (or push server), which consumes resources and battery of the mobile device. Furthermore, there are typically different implementations of push notification services on each mobile platform (such as iOS, Android, Windows Phone, etc.).

[0009] Another example of systems able to transmit push notifications is the Short Messaging System (SMS) of the GSM (Global System for Mobile Communication) standard of wireless networks. However, the Short Messaging System is typically not suited to transmit push notifications as the SMS system is only useful for very short messages.

SUMMARY

[0010] An object of the present invention is to provide a method for an enhanced communication between a user equipment and a telecommunications network, wherein the user equipment comprises an application and a short message push client, wherein the telecommunications network comprises an application server and a short message push server, wherein the application uses push notifications received from the telecommunications network, and wherein the communication is enhanced in that push notifications are transmitted reliably and timely towards the user equipment without the need to continuously maintain an Internet Protocol connection with the telecommunications network.

[0011] The object of the present invention is achieved by a method for an enhanced communication between a user equipment and a telecommunications network, wherein the user equipment comprises an application and a short message push client, wherein the telecommunications network comprises an application server

and a short message push server, wherein the application uses push notifications received from the telecommunications network, wherein in case that a push notification is to be sent from the application server to the application of the user equipment the method comprises the following steps:

- in a first step, information related to the push notification to be sent is transmitted from the application server to the short message push server,
- in a second step, the push notification is transmitted from the short message push server to the short message push client,
- in a third step, the push notification, received by the short message push client, is made available to the application of the user equipment,

wherein the push notification is transmitted from the short message push server to the short message push client as at least one short message according to the short message service protocol (SMS protocol), wherein the at least one short message is of a binary message format.

[0012] According to the present invention it is thereby advantageously possible to enable an enhanced communication between the user equipment or the mobile device on the one hand and the telecommunications network on the other hand by using an SMS channel to transmit the push notification. In the context of the present invention, the term "SMS channel" designates the transmission of information using the SMS protocol (short message service protocol) at least on the air interface between the telecommunications network and the mobile device of user equipment. By using the SMS channel, i.e. by using the short message protocol (SMS protocol), it is advantageously possible according to the present invention to assure the delivery of the push notification to the mobile device (or user equipment) (i.e. to assure that the push notification is always delivered), and to assure a delivery to the mobile device (or user equipment) on time, especially in bad network conditions.

[0013] In case that an Internet Protocol connection is established between the mobile device (or user equipment) and the telecommunications network, the term "using the SMS protocol" also designates using SMS over IP functionality by virtue of which the user equipment is provided with the capability of sending traditional short messages over the IMS (IP Multimedia Subsystem) network.

[0014] It is advantageously possible according to the present invention, that long-live Internet Protocol connections between the user equipment (or mobile device) to the notification server (or push server) can be avoided if such connections are not required for other reasons.

[0015] Additionally, by using an SMS channel to transmit the push notification, it is advantageously possible to natively and automatically adapt the transmission of push notifications to different implementations of push notification services on different mobile platforms (such as

iOS, Android, Windows Phone, etc.).

[0016] According to the present invention, the telecommunications network (used in the inventive method) is a mobile telecommunications network, comprising an access network and a core network, for providing mobile communication services to mobile devices (or user equipments). Typically such a telecommunications network comprises a backbone, and a plurality of base station entities in order to provide mobile communication to user equipments.

[0017] Furthermore according to the present invention, it is advantageously possible to use one short message or a plurality of short messages such that the data content of the push notification is contained in the one short message or plurality of short messages, wherein the short message or messages is/are of a binary message format.

[0018] In the context of the present invention, the term binary message format (in contrast to using text data in the short message, encoded using typically either the GSM alphabet or UCS-2 (Universal Character Set, encoded in two bytes) designates that the one short message or plurality of short messages used to transmit the push notification to be sent to the mobile device or user equipment

- is or are flagged as a binary SMS message (and hence comprising 8-bit binary data used to transmit the information content of the push notification to be transmitted) and/or
- has or have a binary UDH (User Data Header) added, typically at the beginning of the short message, the UDH being used to transmit special information about the short message (and hence the push notification).

Typically, binary data and UDHs are used in combination, with the short message containing binary data and the UDH giving instructions about how to interpret the binary data.

[0019] According to the present invention, it is likewise possible and preferred that the at least one short message (transmitted from the short message push server to the short message push client within the user equipment or mobile device) comprises both, content in binary message format and content (text) according to the standard GSM alphabet or UCS-2 text.

[0020] Furthermore according to the present invention, it is preferred that the one short message and/or the plurality of short messages is a concatenated short message or are concatenated short messages, i.e. a short message or short messages that are longer than the basic limit (of, e.g., 140 bytes per short message). A concatenated message is typically composed by a sequence of parts (or fragments), wherein each part (or fragment) is an SMS message in itself, with, e.g., a UDH that bear enough information to reassemble the parts (or fragments) at by the short message push client of the user equipment or the mobile device. Such parts (fragments)

of a concatenated short message might arrive in any order; if some part (or fragment) is lost - or arrives too late - the recipient's phone might need to display only the part of the message that was received.

[0021] It is furthermore preferred according to the present invention that delivery reports (or delivery receipts) are used to acknowledge the reception of a short message or a plurality of short messages by the user equipment. If this feature is enabled (which might be optional but could also be mandatory), when the one SMS message or the plurality of SMS messages reach(es) its/their destination, a delivery report is generated and sent back to the sender to report that the message was delivered.

[0022] Summarizing, according to the present invention, instead of an Internet Protocol connection, a more reliable and reachable SMS channel is used to deliver push notifications to applications on mobile devices (or user equipments), also called mobile applications. According to the present invention, it is preferred that the (mobile) application first registers with the short message push server and stores an information (identification information or token information) with its own app(lication) server. Then, in case of an event triggered by the app(lication) server, the short message push server will encode a message (push notification) as binary SMS and sent it to a specific port on the user equipment. Then short message push client on the mobile device decodes the binary SMS and distributes it to the application, in a form that is supported by the underlying platform, e.g. iOS, Android, Windows Phone.

[0023] According to the present invention, it is preferred that the at least one short message is - while being sent according to the short message service protocol (SMS protocol) - routed by means of native SMS routing mechanism or by means of using Internet Protocol transport means, in dependence of priorities and/or available capacities of the telecommunications network.

[0024] Furthermore, it is preferred according to the present invention that - in order to transmit the push notification from the short message push server of the telecommunications network to the short message push client of the user equipment - an established Internet Protocol connection does not need to be established between the user equipment and the telecommunications network.

[0025] Thereby it is advantageously possible that the routing can be flexibly optimized, especially in order to balance the load of the telecommunications network, e.g. the operator of the telecommunications network may select to route the push message via SMS (i.e. without using any Internet Protocol functionality or Internet Protocol connectivity) or by using Internet Protocol (especially by encapsulating the SMS channel in Internet Protocol data packets).

[0026] Furthermore according to the present invention, it is preferred that during the first step, the information related to the push notification to be sent to the user

equipment comprises an identification information and/or a token information, wherein the identification information and/or the token information identifies the user equipment and/or the instance of the application.

[0027] Thereby, it is advantageously possible according to the present invention that by means of the identification information and/or the token information,

- the short message push client and/or
 - the instance of the application (on the user equipment) and/or
 - the user equipment and/or
 - both the short message push client and the instance of the application (on the user equipment) and/or
 - both the short message push client and the user equipment and/or
 - both the instance of the application (on the user equipment) and the user equipment and/or
 - the instance of the application (on the user equipment), the user equipment, and the short message push client
- is or are identified and thus the token can be used to direct the one or plurality of short messages to the short message push client (i.e. the user equipment).

[0028] The identification information or token information is preferably an information generated based on phone number of the user equipment and an app(lication) id(entifier). Via the phone number of the user equipment, it is known where the SMS should be sent to (i.e. to which mobile device); via app(lication) id(entifier), it is known, to which app(lication) the push notification should be directed. Preferably, the link between the phone number (of the user equipment), app(lication) id(entifier) and the token information is stored only on the SMS push server, so a leak of private information (like the phone number) is avoided.

[0029] Still furthermore, it is preferred according to the present invention that during a registration acknowledgment step prior to conducting the first step, a first registration acknowledgement message is sent from the short message push server to the short message push client, the first registration acknowledgement message comprising the identification information and/or the token information, and/or a second registration acknowledgement message is sent from the short message push client to the application, the second registration acknowledgement message comprising the identification information and/or the token information.

[0030] Thereby, it is advantageously possible that the short message push client and/or the application in the user equipment is able to store the identification information and/or the token information.

[0031] Furthermore, it is preferred according to the present invention that during a registration request step prior to the registration acknowledgment step, a first registration request message is sent from the application to the short message push client, and/or a second registra-

tion request message is sent from the short message push client to the short message push server.

[0032] Thereby, it is advantageously possible that the registration process can be initiated by the application on the user equipment.

[0033] Still furthermore, it is preferred according to the present invention that in the at least one short message used to transmit the push notification, a compression and/or an encryption method is used.

[0034] Thereby, it is advantageously possible that less time is needed to transmit the push notification (as less short messages need to be used to transport a given amount of information compared to not applying a compression method). Furthermore, the transmittal of the push notification is more reliable (likewise as less short messages are used). To use an encryption method contributes to enhancing privacy of the information conveyed by the push notification.

[0035] The present invention also relates to a telecommunications network for an enhanced communication between a user equipment and the telecommunications network, wherein the user equipment comprises an application and a short message push client, wherein the telecommunications network comprises an application server and a short message push server, wherein the application uses push notifications received from the telecommunications network, wherein the telecommunications network is configured such that in case that a push notification is to be sent from the application server to the application of the user equipment:

- information related to the push notification to be sent is transmitted from the application server to the short message push server,
- the push notification is transmitted from the short message push server to the short message push client,
- the push notification, received by the short message push client, is sent to the user equipment,

wherein the telecommunications network is configured such that the push notification is transmitted from the short message push server to the short message push client as at least one short message according to the short message service protocol (SMS protocol), wherein the at least one short message is of a binary message format.

[0036] According to the present invention it is thereby advantageously possible to enable an enhanced communication between the user equipment and the telecommunications network by using an SMS channel. In case that an Internet Protocol connection is established between the mobile device (or user equipment) and the telecommunications network, the term "using the SMS protocol" also designates using SMS over IP functionality by virtue of which the user equipment is provided with the capability of sending traditional short messages over the IMS (IP Multimedia Subsystem) network. According

to the present invention, long-live Internet Protocol connections between the user equipment and the notification server (or push server) can be avoided if such connections are not required for other reasons. Likewise, the other above mentioned advantages of the inventive method apply - mutatis mutandis - also to the inventive telecommunications network.

[0037] According to the present invention - also with respect to the telecommunications network - it is preferred that the telecommunications network is configured such that the at least one short message is - while being sent according to the short message service protocol (SMS protocol) - routed by means of native SMS routing mechanism or by means of using Internet Protocol transport means, in dependence of priorities and/or available capacities of the telecommunications network.

[0038] Furthermore according to the present invention - also with respect to the telecommunications network - it is preferred that the telecommunications network is configured such that - in order to transmit the push notification from the short message push server of the telecommunications network to the short message push client of the user equipment - an established Internet Protocol connection does not need to be established between the telecommunications network and the user equipment.

[0039] Additionally - also with respect to the telecommunications network - it is preferred that the telecommunications network is configured such that the information related to the push notification to be sent to the user equipment comprises an identification information and/or a token information, wherein the identification information and/or the token information identifies the user equipment and/or the instance of the application.

[0040] Additionally - also with respect to the telecommunications network - it is preferred that the telecommunications network is configured such that prior to sending the information related to the push notification from the application server to the short message push server,

- a first registration acknowledgement message is sent from the short message push server to the short message push client, the first registration acknowledgement message comprising the identification information and/or the token information, and/or
- a second registration acknowledgement message is sent from the short message push client to the application, the second registration acknowledgement message comprising the identification information and/or the token information.

[0041] Furthermore, the present invention relates to a user equipment for an enhanced communication between the user equipment and a telecommunications network, wherein the user equipment comprises an application and a short message push client, wherein the telecommunications network comprises an application server and a short message push server, wherein the

application uses push notifications received from the telecommunications network, wherein the user equipment is configured such that in case that a push notification is to be sent from the application server to the application of the user equipment:

- information related to the push notification to be sent is transmitted from the application server to the short message push server,
- the push notification is transmitted from the short message push server to the short message push client,
- the push notification, received by the short message push client, is sent to the user equipment,

wherein the user equipment is configured such that the push notification is transmitted from the short message push server to the short message push client as at least one short message according to the short message service protocol (SMS protocol), wherein the at least one short message is of a binary message format.

[0042] According to the present invention it is thereby advantageously possible to enable an enhanced communication between the user equipment and the telecommunications network by using an SMS channel. Likewise, the other above mentioned advantages of the inventive method and of the inventive telecommunications network apply - mutatis mutandis - also to the inventive user equipment.

[0043] Furthermore, the present invention relates to a program comprising a computer readable program code which, when executed on a computer and/or on a network node of a telecommunications network, especially an application server and/or a short message push server, and/or on a user equipment, especially in part on the network node of the telecommunications network and in part on the user equipment, causes the computer and/or the network node of the telecommunications network and/or the user equipment to perform the inventive method.

[0044] The present invention also relates to computer program product for using a core network of a telecommunications network, the computer program product comprising a computer program stored on a storage medium, the computer program comprising program code which, when executed on a computer and/or on a network node of a telecommunications network, especially an application server and/or a short message push server, and/or on a user equipment, especially in part on the network node of the telecommunications network and in part on the user equipment, causes the computer and/or the network node of the telecommunications network and/or the user equipment to perform the inventive method.

[0045] These and other characteristics, features and advantages of the present invention will become apparent from the following detailed description, taken in conjunction with the accompanying drawings, which illus-

trate, by way of example, the principles of the invention. The description is given for the sake of example only, without limiting the scope of the invention. The reference figures quoted below refer to the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0046]

Figure 1 schematically illustrates a conventional telecommunications network comprising an access network and a core network, as well as user equipment as mobile devices.

Figure 2 schematically illustrates a communication diagram implementing the inventive method and used by the inventive user equipment and telecommunications network.

DETAILED DESCRIPTION

[0047] The present invention will be described with respect to particular embodiments and with reference to certain drawings but the invention is not limited thereto but only by the claims. The drawings described are only schematic and are nonlimiting. In the drawings, the size of some of the elements may be exaggerated and not drawn on scale for illustrative purposes.

[0048] Where an indefinite or definite article is used when referring to a singular noun, e.g. "a", "an", "the", this includes a plural of that noun unless something else is specifically stated.

[0049] Furthermore, the terms first, second, third and the like in the description and in the claims are used for distinguishing between similar elements and not necessarily for describing a sequential or chronological order. It is to be understood that the terms so used are interchangeable under appropriate circumstances and that the embodiments of the invention described herein are capable of operation in other sequences than described or illustrated herein.

[0050] In Figure 1, a mobile telecommunications network 100 (or public land mobile network public land mobile network) is schematically shown, wherein the telecommunications network 100 comprises an access network 110 and a core network 120. The access network 110 typically comprises a plurality of base stations (or base station entities). Only two such base station entities (or base stations) 116, 117 are schematically represented in Figure 1, together with corresponding radio cells 11, 12. Typically, such a mobile telecommunications network 100 comprises a plurality of user equipments or mobile devices, only one user equipment (or mobile device) 20 is schematically represented in Figure 2. Such a telecommunications network 100 is typically used to provide mobile communication to the connected user equipments or mobile devices 20.

[0051] Figures 2 schematically shows a communica-

tion diagram implementing the inventive method and used by the inventive user equipment 20 and telecommunications network 100. The communication diagram of Figure 2 involves an application 21 as well as an short message push client 25. The application 21 and the short message push client 25 are located on the user equipment 20 (or mobile device). The communication diagram of Figure 2 further involves an application server 111 as well as an short message push server 105. The application server 111 and the short message push server 105 are located either within the same or separate nodes of the telecommunications network 100. The short message push server 105 is, e.g., an an SMSC (SMS Service Center) with extensions to handle extra requirements for treating and transmitting push notifications. The application server 111 connects to the short message push server 105 preferably via the SMS gateway. In a first processing step 41, the application 21 registers with an identifier of the app(lication) for push notification. In a second processing step 42, the short message push client 25 sends a registration SMS towards the short message push server 105. In a third processing step 43, the short message push server 105 returns a confirmation SMS with an identification information and/or token information to the short message push client 25. In a fourth processing step 44, the short message push client 25 sends the identification information and/or token information to the application 21. In a fifth processing step 45, the application 21 sends the identification information and/or token information to the application server 111. After the fifth processing step 45, the registration process is terminated.

[0052] According to variants of the fifth processing step 45, the application 21

- either sends (as depicted in Figure 2) the identification information and/or token information, as well as additional application specific information to the application server 111,
- or the application 21 sends (not depicted in Figure 2) the identification information and/or token information, as well as additional application specific information via SMS to the short message push server 105 which then forwards this information to the application server 111; this second alternative makes sure that the register process works even without any Internet Protocol connection between the user equipment 20 and the telecommunications network 100.

[0053] In case that an event is triggered by the app(lication) server 111, the short message push server 105 will encode a message (push notification) as binary SMS and sent it to a specific port on the user equipment 20. Then short message push client 25 on the mobile device 20 decodes the binary SMS and distributes it to the application 21 in a form that is supported by the underlying platform, e.g. iOS, Android, Windows Phone. Hence, in

a sixth processing step 46, the application server 111 initiates the transmission of a push notification with the identification information and/or token information by sending an information related to the push notification to the short message push server 105. In a seventh processing step 47, the short message push server 105 sends a push notification SMS to the short message push client 25, i.e. the push notification is transmitted using either one short message according to the short message service protocol (SMS protocol) or a plurality of short messages according to the short message service protocol (SMS protocol). In an eighth processing step 48, the short message push client 25 distributes the push notification to the app(lication) 21.

[0054] Hence, according to the present invention, the transmission of the push notification from the application server 111 towards the user equipment 20 (or application 21) is provided by the three steps:

- in a first step, information related to the push notification to be sent is transmitted from the application server 111 to the short message push server 105,
- in a second step, the push notification is transmitted from the short message push server 105 to the short message push client 25,
- in a third step, the push notification, received by the short message push client 105, is made available to the application 21 of the user equipment 20.

[0055] According to the present invention, the push notification is transmitted from the short message push server 105 to the short message push client 25 as at least one short message according to the short message service protocol (SMS protocol), wherein the at least one short message is of a binary message format. If one binary SMS is not enough, multiple SMS messages are used for one push notification.

[0056] Regarding the registration process, it is critical that in the application server 111, an identification information and/or token information is known that is associated with a specific (instance) of an app(lication) on the user equipment 20. It is preferred according to the present invention, that the identification information is generated by the short message push server 105 and provided to the application server 111. One manner of providing the identification information and/or the token information to the application server 111 is by sending it (according to the third processing step 43, the fourth processing step 44, and the fifth processing step 45) via the user equipment (or the application 21) to the application server 111.

[0057] In the following, examples of short messages according to the present invention (for the transmission of push notifications and/or for the registration process) are given:

A. Registration SMS Sample:

1. Data Content in Json format

[0058] {"spn":{"register":{"platform":"android",
"appid":"com.android.sampleapp" }}}}

2. Compressed (optional)

3. Binary SMS

[0059]

069110090000F111000A9210299232900004AA4D
7B2273706E223A7B2272
65676973746572223A7B22706C6174666F726D1D3A
1D616E64726F69641C2C202261
70706964223A22636F6D2E616E64726F69642E7361
6D706C6561707022207D7D7D

Explanations:

[0060] Json is the exemplary format of the Push Notification message; compression is optional; "spn" stands for "SMS Push Notification"; Appid is platform specific, for Android it is, e.g., the package name.

B. Confirmation SMS Sample:

1. Data Content in Json format

[0061]

{"spn":{"confirm":{"token":"cd725b8b6f94457496e14
3303e958bd8"}}

2. Compressed (optional)

3. Binary SMS

[0062]

069110090000F111000A9210299232900004AA407
B2273706E223A7B2263
6F6E6669726D223A7B22746F6B656E223A22636437
323562386236663934343537343
936653134333303365393538626438227D7D7D

Explanations:

[0063] Json is the format of Push Notification message; compression is optional; "spn" stands for "SMS Push Notification"

C. Push Notification SMS Sample:

1. Data Content in Json format

[0064] {"spn":{"appid":"com.android.sampleapp",
"alert":{"title":"hello", "content":"you are welcome"}}

2. Compressed

[0065] For example, a deflate compression algorithm or another algorithm is to be used so that 256 characters can be transmitted via a short message (i.e. with a limit of 140 characters).

3. Binary SMS

[0066]

069110090000F111000A9210299232900004AA622
07B2273706E223A7B22
6170706964223A22636F6D2E616E64726F69642E73
616D706C65617070222C2022616
C657274223A7B227469746C65223A2268656C6C6F2
22C2022636F6E74656E74223A2
2796F75206172652077656C636F6D65227D7D7D

Explanations:

[0067] Json is the format of Push Notification message; the data content is, in principle, not limited but it is advantageous to follow platform specific format if necessary; compression is recommended.

Claims

1. Method for an enhanced communication between a user equipment (20) and a telecommunications network (100), wherein the user equipment (20) comprises an application (21) and a short message push client (25), wherein the telecommunications network (100) comprises an application server (111) and a short message push server (105), wherein the application (21) uses push notifications received from the telecommunications network (100), wherein in case that a push notification is to be sent from the application server (111) to the application (21) of the user equipment (20) the method comprises the following steps:

- in a first step, information related to the push notification to be sent is transmitted from the application server (111) to the short message push server (105),

- in a second step, the push notification is transmitted from the short message push server (105) to the short message push client (25),

- in a third step, the push notification, received by the short message push client (105), is made available to the application (21) of the user equipment (20),

wherein the push notification is transmitted from the short message push server (105) to the short message push client (25) as at least one short message according to the short message service protocol (SMS protocol), wherein the at least

- one short message is of a binary message format.
2. Method according to claim 1, wherein the at least one short message is - while being sent according to the short message service protocol (SMS protocol) - routed by means of native SMS routing mechanism or by means of using Internet Protocol transport means, in dependence of priorities and/or available capacities of the telecommunications network (100).
 3. Method according to one of the preceding claims, wherein - in order to transmit the push notification from the short message push server (105) of the telecommunications network (100) to the short message push client (25) of the user equipment (20) - an established Internet Protocol connection does not need to be established between the user equipment (20) and the telecommunications network (100).
 4. Method according to one of the preceding claims, wherein during the first step, the information related to the push notification to be sent to the user equipment (20) comprises an identification information and/or a token information, wherein the identification information and/or the token information identifies the user equipment (20) and/or the instance of the application (21).
 5. Method according to one of the preceding claims, wherein during a registration acknowledgment step prior to conducting the first step, a first registration acknowledgment message is sent from the short message push server (105) to the short message push client (25), the first registration acknowledgment message comprising the identification information and/or the token information, and/or a second registration acknowledgment message is sent from the short message push client (25) to the application (21), the second registration acknowledgment message comprising the identification information and/or the token information.
 6. Method according to one of the preceding claims, wherein during a registration request step prior to the registration acknowledgment step, a first registration request message is sent from the application (21) to the short message push client (25), and/or a second registration request message is sent from the short message push client (25) to the short message push server (105).
 7. Method according to one of the preceding claims wherein in the at least one short message used to transmit the push notification, a compression and/or an encryption method is used.
 8. Telecommunications network (100) for an enhanced communication between a user equipment (20) and the telecommunications network (100), wherein the user equipment (20) comprises an application (21) and a short message push client (25), wherein the telecommunications network (100) comprises an application server (111) and a short message push server (105), wherein the application (21) uses push notifications received from the telecommunications network (100), wherein the telecommunications network (100) is configured such that in case that a push notification is to be sent from the application server (111) to the application (21) of the user equipment (20):
 - - information related to the push notification to be sent is transmitted from the application server (111) to the short message push server (105),
 - - the push notification is transmitted from the short message push server (105) to the short message push client (25),
 - - the push notification, received by the short message push client (105), is sent to the user equipment (20),
 wherein the telecommunications network (100) is configured such that the push notification is transmitted from the short message push server (105) to the short message push client (25) as at least one short message according to the short message service protocol (SMS protocol), wherein the at least one short message is of a binary message format.
 9. Telecommunications network (100) according to claim 8, wherein the telecommunications network (100) is configured such that the at least one short message is - while being sent according to the short message service protocol (SMS protocol) - routed by means of native SMS routing mechanism or by means of using Internet Protocol transport means, in dependence of priorities and/or available capacities of the telecommunications network (100).
 10. Telecommunications network (100) according to claims 8 or 9, wherein the telecommunications network (100) is configured such that - in order to transmit the push notification from the short message push server (105) of the telecommunications network (100) to the short message push client (25) of the user equipment (20) - an established Internet Protocol connection does not need to be established between the telecommunications network (100) and the user equipment (20).
 11. Telecommunications network (100) according to one of claims 8 to 10, wherein the telecommunications network (100) is configured such that the information related to the push notification to be sent to the user

equipment (20) comprises an identification information and/or a token information, wherein the identification information and/or the token information identifies the user equipment (20) and/or the instance of the application (21).

12. Telecommunications network (100) according to one of claims 8 to 11, wherein the telecommunications network (100) is configured such that prior to sending the information related to the push notification from the application server (111) to the short message push server (105),

- a first registration acknowledgement message is sent from the short message push server (105) to the short message push client (25), the first registration acknowledgement message comprising the identification information and/or the token information, and/or
- a second registration acknowledgement message is sent from the short message push client (25) to the application (21), the second registration acknowledgement message comprising the identification information and/or the token information.

13. User equipment (20) for an enhanced communication between the user equipment (20) and a telecommunications network (100), wherein the user equipment (20) comprises an application (21) and a short message push client (25), wherein the telecommunications network (100) comprises an application server (111) and a short message push server (105), wherein the application (21) uses push notifications received from the telecommunications network (100), wherein the user equipment (20) is configured such that in case that a push notification is to be sent from the application server (111) to the application (21) of the user equipment (20):

- information related to the push notification to be sent is transmitted from the application server (111) to the short message push server (105),
- the push notification is transmitted from the short message push server (105) to the short message push client (25),
- the push notification, received by the short message push client (105), is sent to the user equipment (20),

wherein the user equipment (20) is configured such that the push notification is transmitted from the short message push server (105) to the short message push client (25) as at least one short message according to the short message service protocol (SMS protocol), wherein the at least one short message is of a binary message format.

14. Program comprising a computer readable program code which, when executed on a computer and/or on a network node of a telecommunications network (100), especially an application server (111) and/or a short message push server (105), and/or on a user equipment (20), especially in part on the network node of the telecommunications network (100) and in part on the user equipment (20), causes the computer and/or the network node of the telecommunications network (100) and/or the user equipment (20) to perform a method according one of claims 1 to 7.

15. Computer program product for using a telecommunications network (100), the computer program product comprising a computer program stored on a storage medium, the computer program comprising program code which, when executed on a computer and/or on a network node of a telecommunications network (100), especially an application server (111) and/or a short message push server (105), and/or on a user equipment (20), especially in part on the network node of the telecommunications network (100) and in part on the user equipment (20), causes the computer and/or the network node of the telecommunications network (100) and/or the user equipment (20) to perform a method according one of claims 1 to 7.

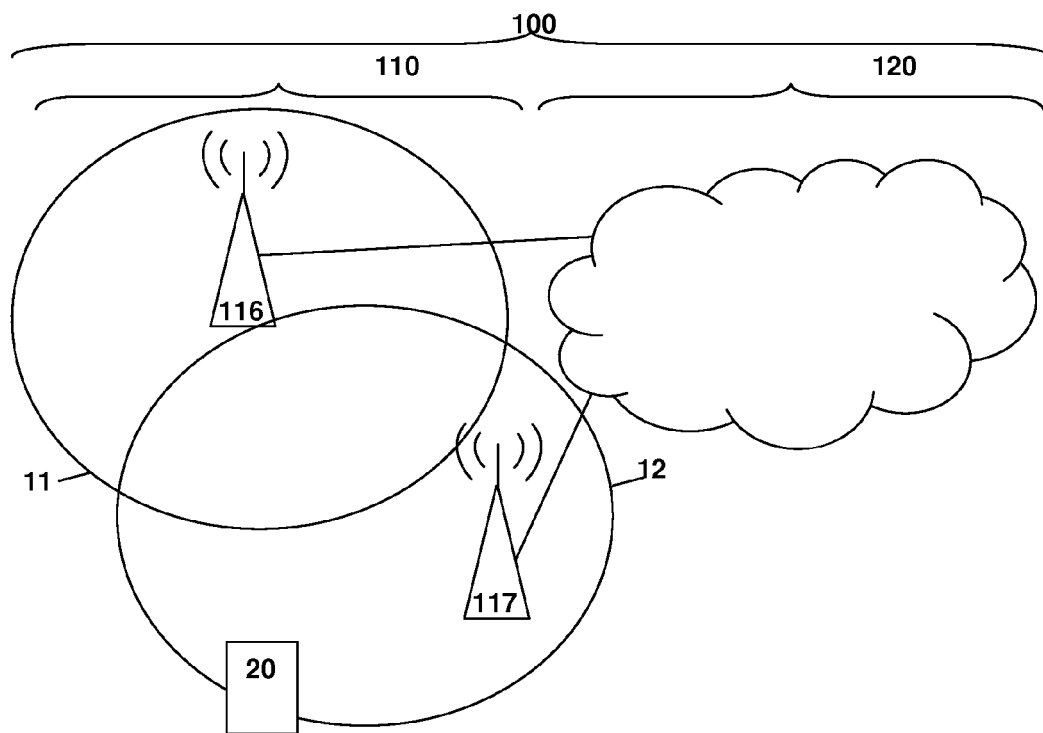


Fig. 1

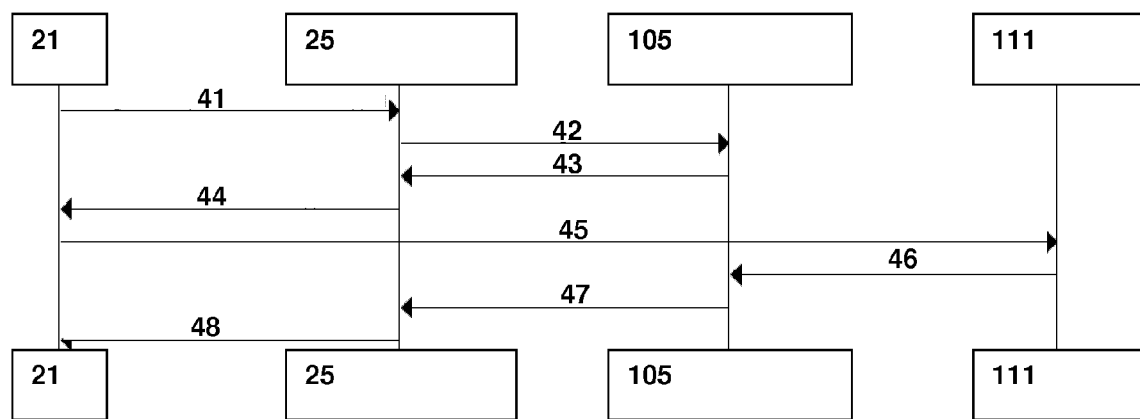


Fig. 2



EUROPEAN SEARCH REPORT

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Place of search Munich		Date of completion of the search 14 March 2014	Examiner Padilla Serrano, M
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 14 March 2014	Examiner Padilla Serrano, M
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